Air Force SBIR Advantage

3rd Quarter 1999

Offering a brief look at the vital research and development contributions made by the Small Business Innovation Research (SBIR) Program in direct support of the Air Force mission.

Air Force SBIR Update

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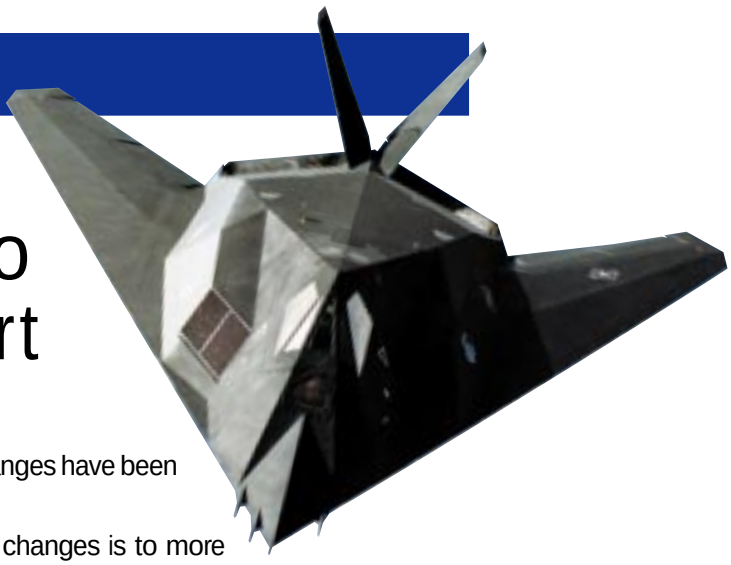
SBIR Program Changes Focus to Warfighter Support

by Stephen Guilfoos



Over the past six months a number of important operational changes have been made to the Air Force SBIR Program. The objective of these changes is to more critically focus on taking technology development and its insertion into aerospace systems to the next level. The end result is increased technology payoffs to the warfighter. I want to tell you about a few of these changes that are sure to impact technology development for the 21st century Air Force.

Topic Allocation System Turned Rightside Up

Perhaps the most hotly debated issue regarding the Air Force SBIR Program is, "who really calls the shots?" in terms of the research topics selected for the annual solicitation. In the past, Air Force Research Laboratory (AFRL) directorates developed most of the SBIR R&D topics. Many viewed the result as a laboratory-centered program, with only limited near-term connections to the operational Air Force.

The AF SBIR Program office took action to flip the old allocation system upside down – or from the warfighter's perspective – rightside up. AF SBIR increased participation by Program Executive Offices (PEO). Rather than assigning most of the topics to AFRL, most topics are now assigned to PEOs.

This new system promises more direct response to the needs of the warfighter. Now PEOs, working closely with AFRL, "call the shots" on developing SBIR topics. The bottom-line is to bring more new products into the Air Force and commercial marketplace.

Success in reaching this goal will be determined by how closely we can tie the awarding of SBIR contracts directly to the needs of the program offices. In the near term we will be taking more steps in this direction while continuing to focus our efforts more closely on the warfighter as our primary SBIR customer.

Continued on page 4...

SBIR Tech Issues

Tech Issues is intended for personnel directly involved in the operation and support of the AF SBIR program.

Coming Soon — Electronic Proposals

Starting with the SBIR 2000.1 solicitation, the Air Force plans to expedite the data entry and evaluation process of the SBIR program, by requiring all proposals (Appendix A and B) to be submitted electronically by the proposing small business. This will save time and increase the accuracy of the SBIR database.

Plans call for proposals to be submitted to the Air Force using the online submission, managed by the Air Force database contractor (BRTRC).

The Air Force will not accept any proposals that do not have electronic forms of Appendix A and B. The online submission will allow the proposing small businesses to print or edit their appendices any time prior to the closing of the solicitation. The Air Force will close this electronic submission site down at the precise time of the solicitation closing.

Closing the Phase I/II Gap

To limit the historic time and funding gap between Phase I and II contracts, the Air Force has initiated a mandatory nine-month Phase I contractual period of performance.

The nine-month contract enables the Air Force to maintain an average of 60 to 90 days between Phase I and II.

Phase I award winners will be required to accomplish their primary research during the first six months of the contract. Their primary research effort alone is used to determine whether the Air Force will request a Phase II proposal.

During the final three months of the Phase I contract period, additional related research efforts will further the Phase I effort and put the small business in a better position to start a Phase II contract, if awarded. Phase II proposals are by invitation only.

SBIR Central

Air Force Research Laboratory, which provides management of the Air Force SBIR program, invests almost 80 percent of its budget in sponsored R&D with academia and industry.

SBIR Facts & Figures

Federal SBIR Program

- The federal SBIR program was established in 1982. Since then it has made over 47,000 SBIR awards totaling nearly $8 billion.
- Small Business Administration estimates that over 40 percent of SBIR activities result in commercially marketed products from participating small businesses.
- Technical data rights developed under terms of an SBIR contract remain with the business for a period of five years.

DoD SBIR Program

- The DoD SBIR Program funds over $500 million per year in early-stage R&D projects with small businesses.
- For Fiscal 1999, the DoD solicitation contains 716 SBIR topics. The Air Force has over 270 topics included in this number.
- The DoD Pre-solicitation is released in October and May of each year. For information contact: www.acq.osd.mil/sadbu/sbir

Air Force SBIR Program

- Air Force SBIR budget for Fiscal 1999 is $194,436,000.
- Air Force SBIR Program has recently made significant modifications to encourage greater participation by weapon system PEOs and DACs in the development of topics.
- The yearly Air Force SBIR Pre-solicitation is released by July 1. For more information see www.afrl.af.mil/sbir/index.htm.

Spacecraft Vibration Isolation System Moves to Flight Status

Air Force Requirement

Many small military and commercial satellites will be launched in the next decade. Most of the launch vehicles, like those of the Multi-Service Launch System (MSLS), involve solid-fuel booster engines. The solid-fuel motors require large resonant burns that give a harsher ride than larger launch vehicles. The Air Force looked to reduce these launch loads so that spacecraft and their instruments can be designed with more concentration on orbital performance rather than launch survival. The severe launch environment accounts for much of the expense of designing, qualifying, and testing satellite components. In the last 10 years, billions of dollars have been lost as a result of launch loads that have resulted in mission failure or loss of performance.

"A vibration isolation system is an inexpensive insurance policy to insure that our multi-million dollar satellites get into orbit in one piece."

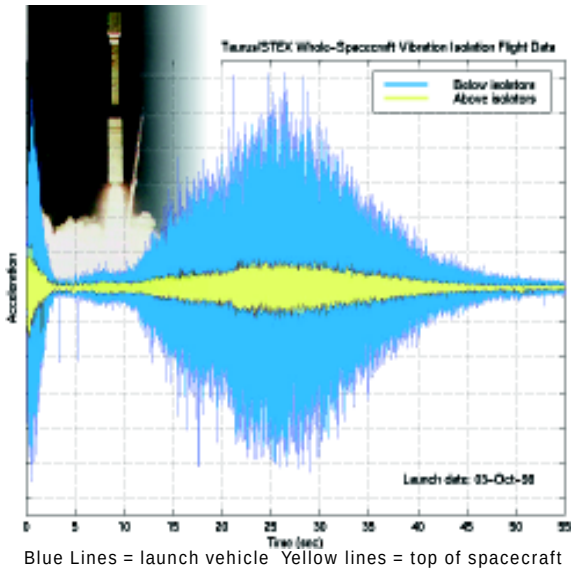
Eugene R. Fosness
SBIR Project Officer
AFRL/VSDV

SBIR Technology

Working closely with AFRL's Space Vehicles Directorate, under a series of SBIR contracts, CSA Engineering developed, tested and advanced to flight status the new technology of whole-spacecraft vibration isolation. Under this innovative technology, passive isolation devices (non-intrusive to existing hardware and lightweight) isolate the vibration caused by the launch vehicle from the complete spacecraft. Reducing the dynamic vibrations from the launch vehicle results in immediate increases to mission payload or fuel while reducing the risk of vibration damage to the spacecraft and payload instruments during ascent to orbit.

Payoff

Vibration isolation technology will lead to cheaper, lighter weight, and more reliable spacecraft. Reduced vibration environments will have a direct impact on the overall cost of spacecraft design, testing, operation, and mission survivability. Several subsystems, such as solar arrays and other flexible structures, can be made lighter and use less expensive materials, resulting in both mass and production cost savings.



Blue Lines = launch vehicle Yellow lines = top of spacecraft

The whole-spacecraft vibration isolation system was used during 1998 flights of the Navy's GFO spacecraft and the National Reconnaissance Office's STEX satellite, both with Taurus launch vehicles. It is estimated this innovative SBIR-sponsored technology saved over $14 million and many months for these two missions alone.

The new vibration isolation system is proving to be an enabling technology. It has been shown to reduce some critical dynamic loads on the spacecraft to as little as 20 percent of their original magnitude.

Air Force recipients of this important new technology include DoD's MSLS and the Air Force Space Command.

Technology Transfer/ Commercialization

The commercial potential for this technology continues to grow with whole families of military and commercial launch vehicles requiring the vibration isolation technology.

SBIR Partner

CSA Engineering, Inc.
Mountain View, CA

Employees

30

Air Force SBIR Update

Continued from page 1...

Increasing the Role of ALCs and Test Centers

Another recent change is to increase the number of topics we assign Air Logistic Centers (ALC) and Air Force Test Centers to manage. This increase in assigned research topics promises to bring more innovative technologies directly into organizations that have immediate impact on operational applications, while serving a broad base of the Air Force.

SBIR

From 1992 to 1999 the Air Force SBIR Program grew from $66.8 million per year to over $200 million. This represents nearly 35 percent of the entire DoD SBIR budget.

Coordinated Communication Creates Better Topics

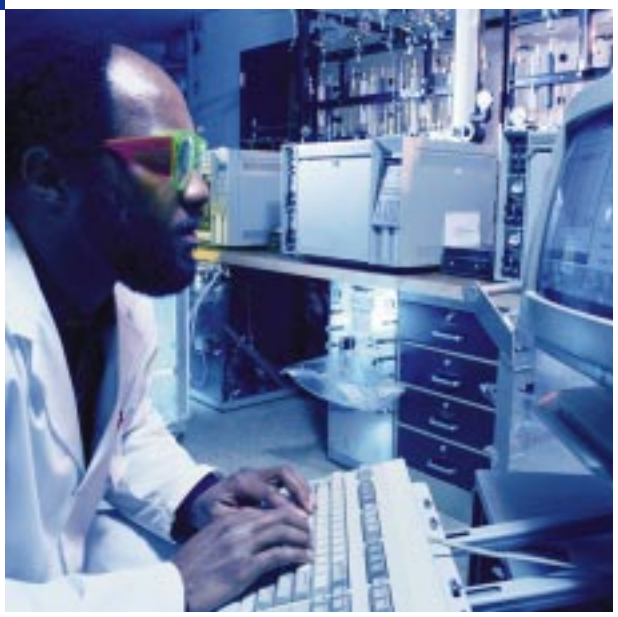
More effective communications is a key ingredient in the process of refocusing and accelerating the SBIR program for the warfighter. In order to improve communications and networking, the Air Force SBIR Program is emphasizing the need for more connectivity between key players.

AFRL sectors will be working more closely with program offices in the development of new SBIR research topics. In turn, program offices will be working more closely with the AFRL technology directorates. Each organization's investment strategy needs to adequately reflect the vital role SBIR-developed technologies can play. The real payoff ensures focusing on the needs of the warfighter early in the SBIR process. Full success comes when the program office inserts the developed technologies in fielded systems and subsystems.

Phase II Enhancement Program

In another important development, the Air Force is creating the "SBIR Phase II Enhancement Program." Here, the SBIR program will provide up to $250,000 in additional Phase II matching funds to a small business to extend an existing SBIR Phase II contract for those "high potential" technologies.

These technologies offer the best near-term payoff for the Air Force. It will ensure we get a head start on preparing the technology for insertion.



To participate, small businesses will need to identify outside matching funding and the receiving program office needs an acquisition strategy for the technology upon completion of the SBIR Phase II contract.

Yes, changes in the Air Force SBIR Program are happening fast. We are keeping ahead of the strong demand for technology in today's Air Force. The one constant in the Air Force SBIR Program is that we are determined to support the warfighter – "To Fly, Fight, and Win." Together we will make the AF SBIR Program preeminent amongst all the federal SBIR programs.

Air Force SBIR Advantage

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The goal of the Air Force SBIR Program is to serve the technology needs of Air Force warfighters. It accomplishes its mission as part of the Air Force Research Laboratory's (AFRL) integrated research and development (R&D) team. AFRL's mission is to be the Air Force agent for identifying and providing advanced, affordable and integrated technologies that keep our Air Force the best in the world.

SBIR Advantage is published quarterly by the Air Force SBIR Program office. This publication offers an overview of AF SBIR issues and information. The purpose of *SBIR Advantage* is to provide Air Force, DoD and other government leadership with additional insight into the vital contributions made by the SBIR program to Air Force R&D.

SBIR Advantage is available online at: www.afrl.af.mil/sbir/index.htm

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Science and Technology for Tomorrow's Aerospace Force